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ATTORNEY DOCKET NO. - R. ADDINALL 1-1

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Ross Addinall, *et al.*

Serial No.: 09/639,288

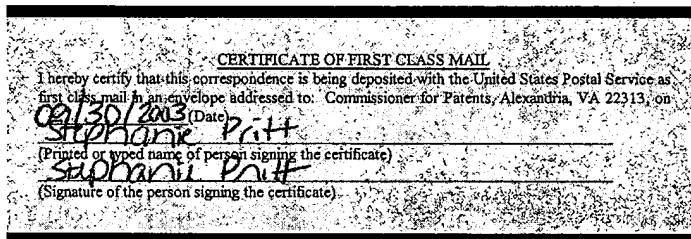
Filed: August 15, 2000

Title: INTEGRATED CIRCUIT DIE FOR WIRE BONDING
AND FLIP-CHIP MOUNTING

Grp./A.U.: 2814

Examiner: Phat X. Cao

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450



Mail Stop: Appeal Brief-Patents

Sir:

APPELLANTS' REPLY BRIEF UNDER 37 C.F.R. §1.193

In response to the Examiner's Answer mailed July 30, 2003, the Appellants submit this
Reply Brief in triplicate as required by 37 C.F.R. §1.193.

I. Reply to Examiner's Arguments

A. Claims 1-4 and 7-10 Anticipated by Juso.

The Examiner has withdrawn his grounds for any rejection of Claims 1-4 and 7-10 as being anticipated under 35 U.S.C. §102(e) by U.S. Patent No. 6,265,783 to Juso, *et al.* ("Juso"). Thus, Appellants respectfully request a finding that Claims 1-4 and 7-10 are not anticipated by Juso. Furthermore, inasmuch as the Examiner has not established further grounds for the rejection of Claim 4, the Appellants respectfully request that Board of Patent Appeals and Interferences to reverse the Examiner's Final Rejection of the Appellants' pending Claim 4.

B. Claims 1-3 and 8-10 Anticipated by Shim.

The Examiner argues that Claims 1-3 and 8-10 are anticipated under 35 U.S.C. §102(b) by U.S. Patent No. 5,641,946 to Shim. Of course, as the Board knows, anticipation requires that each and every element of the claimed invention be disclosed expressly or inherently in the reference and that the elements be arranged as in the rejected claims.

The Examiner refers to Figures 5A, 9A-9B and 11 of Shim to construct a first set of pads with a first spacing and a second set of pads with a second spacing. The Examiner states on page 3 of his answer:

Referring to Shim's Figs. 9A-9B 9 (or Fig. 5A) and Fig. 11, *if* the center-to-center spacing between one of the top outermost pads 5 and the corresponding adjacent outermost pad 5 at the bottom is defined as the first spacing of the first set, and the spacing between the two adjacent innermost pads 5 as defined as the second spacing of the second set, (Emphasis added).

The use of the word "if" is a critical telltale. Without any basis of support other than his own interpretation of the relevant figures, the Examiner has designated the outermost row of lands

as a first set and the interior rows as a second set. Contrary to the ordinary meaning of the word “adjacent,” the Examiner then designated an exterior land on one side as adjacent to a land on the opposite side to find a first spacing. If it is accepted that the row of outer lands does constitute a set, the Appellants submit that a person of ordinary skill in the art would apply the generally accepted meaning to the word “adjacent” to find adjacent lands to define a first spacing. FUNK & WAGNALS NEW COMPREHENSIVE INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE, ENCYCLOPEDIA EDITION (1974) defines the adjective “adjacent” as lying near or close at hand; adjoining; contiguous. Thus, a person of ordinary skill in the art would conclude that an adjacent land to any land in Shim would lie immediately to the right or left of such land and not one on the opposite side. If it was either expressly or inherently meant for adjacent lands to refer to lands on the opposite side, which is the position espoused by the Examiner, then surely such would have been disclosed within the Shim specification. While the Appellants appreciate the Examiner’s zeal, the Examiner has not established a *prima facie* case that the present invention has been anticipated by Shim.

C. Claim 7 Not Obvious Over Shim.

The Examiner argues that Claim 7 is unpatentable under 35 U.S.C. §103(a) in view of Shim. The Examiner acknowledges that Shim does not disclose the first set of pads being connected to one set of connection points and the second set being connected to another set of connection points in an integrated circuit. The Examiner claims it would be obvious to connect the pad set in Shim to connection points. While it may be obvious that pads provide connection points, it is not obvious in Shim that the pads are divided into sets and that each such set provides for connection to different connection points. Thus, because Shim does not teach or suggest each and every element of Claim

7, including those of Claim 1 on which Claim 7 depends, Shim fails to support a *prima facie* case of obviousness.

D. Reply to Examiner's Response to Arguments Regarding Shin Anticipating Claims 1-3.

In response to Appellants' argument that Claims 1-3 are not anticipated by Shim, the Examiner set forth several reasons why such arguments should not be considered persuasive. Appellants recognize, of course, that it is up to the Board to determine whether any argument is persuasive, but offer the following comments with respect to the Examiner's reasons.

1. The Examiner states that the Appellants can not assert that the set of pads (d, d2, d3) are different sets of pads because they have a number of different sizes. The reasoning of the Examiner is difficult to follow, but he appears to be taking the position that because the Appellants only claim two sets of pads, they can not distinguish between the claimed invention and the reference based on the reference having more than two. In the instant case, if there is any basis at all for the position that Shim describes more than one set of pads (which position is necessary to support the Examiner's position), then the sets must be classified or determined on some basis of commonality. Shim describes pads that are of different sizes to influence the heights of solder balls placed on such pads. This is the novel feature of Shim and, therefore, the only logical factor for set classification, particularly in view of the fact that the pertinent claims on appeal herein refer to pads by their relative size.

2. In the process of preparation of the Appeal Brief the Appellant inadvertently referred to pad height instead of pad width. Such mistake is not critical to the Appellants' position, however, because the pad size in Shin is used to influence the ultimate size of the solder balls. The Appellants

appreciate the Examiner's diligence in calling this to their attention. The last sentence of the first paragraph on page 11 of the Appeal Brief should read:

More specifically, Shim discloses that the insulating layer 6 exposes pads of three or four sets of conductive pads 5 of respective widths d_1 , d_2 , d_3 and d_4 heights h_1 , h_2 , h_3 and H . (FIGs. 11 and 14).

3. The Examiner notes that the claims in a pending application should be given their broadest reasonable interpretation as a basis for asserting that only two sets of conductive pads are present in Shim. The Appellants do not believe that a reasonable interpretation of Shim is limited to two sets of pads. By any reasonable criteria, Shim describes a number of different sets of lands or pads. Thus, Shim does not disclose a passivation layer 6 that exposes only first and second sets of pads. What Shim does disclose is a passivation layer that exposes more than two sets of pads, if any reasonable method is used to classify the pads .

4. The Appellants refer to the discussion above with respect to the Examiner's position regarding the issue of a first spacing between adjacent pads and a second spacing between adjacent pads. For further clarification, the Appellants refer the Board to the Appeal Brief.

5. The Examiner disputes the Appellants assertion that in one embodiment of Shim the lands are of a uniform size. The Examiner is referring to Appellants contravention of the Examiner's position that the insulating mask 6 disclosed in Shim is a passivation layer as recited in Claims 1 and 8 of the present application. The embodiment disclosed in Shim that includes an insulating mask 6 provides for solder ball lands 5 all of the same size. It is the overlying mask that reduces the effective size of the lands by masking off a portion of certain lands to reduce their effective area. It is Appellants' position that Shim thus fails to disclose a single embodiment comprising both a passivation layer and first and second sets of conductive pads wherein the pads

of the first set are larger than the pads of the second set, as recited in Claims 1 and 8 of the present application.

6. The Appellants reassert their argument that Shim is not an anticipating reference for dependent Claims 2 and 3 because Shinn does not disclose all elements of Claim 1, upon which each depends.

E. Reply to Examiner's Response to Arguments Regarding Shin Anticipating Claims 8-10.

The Examiner's arguments with respect to independent Claim 8 again require an acceptance of his view of how the pads in Shim should be classified and how the distance between "adjacent" pads be determined. The Appellants view in this regard has been expressed above and in the Appeal Brief. With respect to the distance between pads in Shim, it is in most cases uniform from pad to pad and only by a convoluted attempt to place pads in different classifications, which Shim did not do, can the Examiner's argument be given credence.

The argument on page 12 of the Appeal Brief was directed to the embodiment of Shim where a mask is used to reduce the apparent size of land area for reflow purposes. As described above, the lands are all a uniform size even though the effective area is reduced by a mask.

The Appellants reassert their argument that Shim is not an anticipating reference for dependent Claims 9 and 10 because Shim does not disclose all elements of Claim 8, upon which each depends.

F. Reply to Examiner's Response to Arguments Regarding Claim 7 Obvious Over Shin.

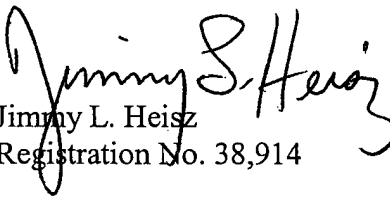
The Examiner did not raise additional issues with respect to Claim 7 being obvious over Shim that have not been adequately addressed herein or in the Appeal Brief.

II. Conclusion

For the reasons set forth in the Appeal Brief and herein, the Claims on appeal are patentable over and in view of the Shim reference relied upon by the Examiner. Accordingly, the Appellants respectfully request that the Board of Patent Appeals and Interferences reverse the Examiner's Final Rejection of the Appellants' pending Claims 1-4 and 7-10.

Respectfully submitted,

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Dated: Sept 30, 2003

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